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ABSTRACT

The effectiveness of two extra-stimulus prompting procedures was compared in teaching receptive labels to a 3 year old autistic boy. One prompting procedure was used exclusively by the treatment center the child attended and was similar to extra-stimulus prompts used in previous studies. The procedure involved alternating unprompted trials of a verbal command and physically prompted trials of a verbal command. The second procedure, a modified extra-stimulus prompt, involved the initial presentation of only physical prompts without a verbal command and then the verbal command was faded in while the prompt was faded out. The S acquired a receptive label with each procedure, but he made fewer errors with the modified extra-stimulus prompting procedure. When the verbal command used with each prompting procedure was randomly presented immediately after training and 3 weeks later, the child's accuracy of responding to the verbal command used with the modified extra-stimulus prompting procedure was greater than to the verbal command used with the other extra-stimulus prompting procedure. (Author/CL)

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Teaching an Autistic Child Receptive Labels: A Comparison of Two Types of Extra-Stimulus Prompting Procedures

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Abstract

Two extra-stimulus prompting procedures to teach an autistic child receptive labels were compared. One prompting procedure was used exclusively by the treatment center the child attended and was similar to extra-stimulus prompting procedures used in previous studies. This procedure involved alternating unprompted trials of a verbal command and physically prompted trials of a verbal command. The other, a modified extra-stimulus prompting procedure, involved the initial presentation of only physical prompts without a verbal command and then the verbal command was faded in while the prompt was faded out. The autistic child was able to acquire a receptive label with each procedure, but the child made fewer errors with the modified extra-stimulus prompting procedure. When the verbal command used with each prompting procedure was randomly presented immediately after training and three weeks later, the child's accuracy of responding to the verbal command used with the modified extra-stimulus prompting procedure was greater than to the verbal command used with the other extra-stimulus prompting procedure

Initially, most of the behavioral treatment approaches developed to teach autistic children new concepts such as expressive labels, receptive labels, and visual and auditory discriminations have involved the use of prompts (see Ferster and DeMyer, 1962; Lovaas, Berberich, Perloff, and Schaeffer, 1966; Lovaas, Freitas, Guilani, Nelson, and Whalen, 1967; Metz, 1965; Risley and Wolf, 1967). The prompt is some type of guiding or extra stimulus (i.e. pointing to the specific object, physically moving the child's hand, telling the correct answer, etc.) which allows the child to make the correct response with minimal or no training. This extra-stimulus prompt is gradually faded so that the child eventually learns to respond correctly without the use of a prompt.

With most extra-stimulus prompt fading procedures, there are times when the training stimulus is presented without a prompt. Thus, the child has the opportunity to make errors. As both Lovaas (1977) and Sidman and Stoddard (1965) note, errors interfere with learning and often times result in a temper tantrum and makes the autistic child unresponsive or haphazard in his performance.

In addition, when an extra-stimulus prompt fading procedure is used with autistic children, stimulus control often times does not transfer from the prompt to the training stimulus. Autistic children have been found to be overselective in their attention

(see Lovaas, Schreibman, Koegel, and Rehm, 1971; Lovaas and Schreibman, 1971, Koegel and Wilhelm, 1973; Schreibman and Lovaas, 1973; Reynolds, Newsom, and Lovaas, 1974; Koegel and Rincover, 1976; Schreibman, 1975). These studies have demonstrated that autistic children often times do not attend to the relevant featurs of a stimulus. Thus, when a prompt is presented with the training stimulus, the autistic child may attend only to the prompt, and not the training stimulus. When the prompt is removed, the child has failed to attend to the relevant features of the training stimulus and thus is unable to respond correctly (i.e. stimulus control has not been transferrd from the prompt to the training stimulus). Koegel and Rincover (1976) and Schreibman (1975) have found extra-stimulus prompts to be ineffective in teaching autistic children visual and auditory discriminations.

Thus, for a prompting approach to be maximally effective with autistic children, it would appear to be improtant to minimize the number of errors the child makes and facilitate the child's attention to the relevant features of the training stimulus. Recognizing this, Schreibman (1975) assessed the effectiveness of a within-stimulus prompting procedure. This procedure involved initially training the child ro respond appropriately to a prompt which was in fact an exaggerated feature of the training stimulus. Utilizing an errorless fading procedure similar to Terrace (1963), this exaggerated feature or within-stimulus prompt was gradually transformed into the original training stimulus. Schreibman (1975) found that discriminations which could not be learned with an extra-stimulus prompting procedure could be learned with this within-stimulus prompting procedure. Rincover (1978) provided further support for this procedure and La Vigna (1977) utilized a procedure similar to this to teach receptive and expressive language utilizing the written word. Thouch this procedure effectively minimizes errors and facilitates the child's attention to the relevant features of the training stimulus, it would appear to be difficult and expensive to implement in most educational settings for autistic children. It requires the preparation of numerous stimulus materials for each fading step, appears to take a great deal of time to implement, and seems to be a difficult task for most special education teachers and aids to learn how to use.

Lovaas (1977) has described a number of modifications of an extra-stimulus prompting procedure to teach autistic children receptive albels which appear to incorporate some of the advantages of the within-stimulus prompting procedure. These involve exaggerating the relevant features of the training stimuli, altering the positions of the training stimuli, and presenting only brief glimpses of stimuli other than the training stimuli.

Another possible modification of an extra-stimulus prompting procedure to teach receptive labels, which has not been previously

attempted is to initially present only prompted trials without a verbal command. By initially not allowing the subject an opportunity to respond incorrectly and fading in the verbal command, it would be hoped that the autistic child would make a minimum number of errors and attention to the relevant features of the training stimulus would be facilitated. The current study was designed to assess the effectiveness of such a modified extra-stimulus prompting procedure to teach a receptive label to an autistic child. This procedure was compared to a common extra-stimulus prompting procedure.

Method

Subject

The Subject was a 3 year 6 month old boy who attended a day treatment center for autistic children and children with severe communication disorders in San Diego, California. The subject was diagnosed as autistic by agencies not affiliated with the study. The child was mute and made no sounds nor any appropriate verbal behavior. The child had minimal self-help and social skills and engaged in a number of unique self-stimulatory behaviors such as repeated pulling of the ears and stiffening of body posture. The child was extremely distractible and was unable to be tested on any standard verbal or nonverbal test of intelligence.

Materials

Eight items commonly used to teach receptive labels to the children at the center were used as stimuli in the study. They were a toy doll, a small plastic basketball, a rubber ball, a plastic apple, a shoe, a key, a plastic lemon, and a toy car. The child had exposure to these items only when participating in the study.

Training

All training was conducted by the author in a 5x5 ft. enclosed cubicle off of a hallway at the school. The experimenter sat immediately to the right of the child in order to record responses and administer reinforcers. For each session, the toys were randomly presented by dumping them out of a box on a table immediately in front of the child to prevent him from forming a position preference.

During training, the subject had two sessions a day each lasting 20 trials and approximately 20 minutes. One session involved training with a traditional extra-stimulus prompting procedure and the other session involved training with a modified extra-stimulus prompting procedure. The order of the training

sessions each day was random. The stimulus chosen for the traditional extra-stimulus prompting procedure was the car and for the modified extra-stimulus prompting procedure, the doll. A correct response was physically touching any part of the doll or car within 5 seconds of the appropriate verbal command, "touch the doll" or touch the car." Correct responses were rewarded with social praise and a food reward. Incorrect responses were ignored. For both procedures, criterion was 80% or more correct responses for two consecutive sessions of 20 unprompted trials. Prior to training, the 8 toys were randomly presented to the child and he received 20 trials of the verbal command, "touch the car" and 20 trials of the verbal command, "touch the doll." The subject failed to make any sort of response on any of these trials and thus it appeared that the verbal commands and receptive labels were non-functional prior to training.

Training with Traditional Extra-Stimulus Prompting Procedure

This procedure was used exclusively by the center and was similar to extra-stimulus prompting procedures which had been used in the past to teach autistic children receptive labels (see Koegel and Rincover, 1977; La Vigna, 1977) and visual and auditory discriminations (Rincover, 1978; Lovaas, Schreibman, Koegel, and Rehm, 1971).

Training began by the experimenter presenting the verbal command, "touch the car." The verbal command was presented for 3 trials. If the child failed to respond correctly on each of the trials; the extra-stimulus prompt was presented for the next 5 consecutive trials. Initially, this involved the simultaneous presentation of the verbal command with a full physical prompt. While the experimenter said, "touch the car", he took the child's hand and placed it in on the car. When the child touched the car, the experimenter rewarded the subject with social praise and a piece of candy which was placed in the subject's mouth. If the child responded correctly on 80% of the 5 prompted trials, he again experienced 3 unprompted trials of the verbal command, "touch the car." If after 5 prompted trials, the subject failed to achieve a criterion of 80% correct responses or better, he received additional prompted trials until he reached the 80% criterion or 20 trials, which signified the end of the session. The subject was only presented with prompted trials if he failed to respond correctly on three consecutive unprompted trials.

The extra-stimulus prompt was faded by the following procedure. If the child, at the end of a day's session had responded on the prompted trials at an 80% correct level or better, he was advanced to the next prompting step. The prompting steps are presented in Table 1.

Insert Table 1 about here

If the child failed to reach the 80% criterion on the prompted trails at the end of a day's session, he remained at that prompting step until the 80% criterion level was reached. The child remained at the final prompting step until the training criterion, 80& correct responses to the verbal command for 40 consecutive unprompted trials, was reached.

Training with the Modified Extra-Stimulus Prompting Procedure

With this procedure, the subject initially experienced prompted trials without the verbal command. the subject first experienced trials with a full physical prompt. The experimenter took the child's hand and placed it on the doll. Once the child's hand was on the doll, the experimenter rewarded the child with a piece of candy and social praise. The extra-stimulus prompt was faded by the following procedure. At the end of a day's session, if the child responded correctly on 80% of the trials or better, he was advanced to the next prompting step. The fading steps for the modified extra-stimulus prompt are presented in Table 2.

Insert Table 2 about here

When the child reached Step 6, the prompt was now paired with the verbal command, "touch the doll." The child did not experience any unprompted trials until he went through all the fading steps of the prompting procedure.

Once the child reached Step 9 of the modified extra-stimulus prompting procedure, he now began to experience unprompted trials and thus had more opportunity to make errors. To minimize the number of errors the child made, unprompted trials were gradually faded in during Step 9. Unprompted trials were presented on 50% of the 20 trials, then 75% of the trials, then 90%, and finally the child only experienced unprompted trials of the verbal command.

Thus, the modified extra-stimulus prompting procedure differed from the traditional procedure in that the child initially experienced only prompted trials without a verbal command rather than alternating trials of prompted and unprompted verbal commands. With the modified procedure, fading progressed from physical prompts to physical prompts with a verbal command to unprompted presentations of the verbal command.

Discrimination Assessment

Once the child reached criterion for both training procedures, an attempt was made to assess how well the child discriminated each receptive label. The child had one session a day lasting 40 trials or 20 minutes, whichever came first. Unprompted trials of the

verbal commands, "touch the doll" and "touch the car" were randomly presented to the child. Each day, the child received an equal number of unprompted trials for each verbal command. A correct response was rewarded with verbal praise and a piece of candy. Incorrect responses were ignored. After 3 sessions, the center closed for 3 weeks for summer vacation and this phase of the study had to be discontinued.

Maintenance

When school resumed, the child was seen for two more sessions in order to assess the retention and maintenance of the receptive labels. The same procedure that was used during the discrimination aasessment phase of the study was continued during this phase.

Results

The accuracy of responses for both the unprompted and prompted trials for the two extra-stimulus prompting procedures during training are presented in Figure 1.

Insert Figure 1 about here

It took a comparable number of sessions to reach criterion for both procedures; 17 sessions for the traditional extra-stimulus prompting procedure and 18 sessions for the modified extra-stimulus prompting procedure. Thus, it appeared that both procedures were equally effective during this phase of the study.

Looking at Figure 1, it is also apparent that the subject during training was more accurate with the modified extra-stimulus prompting procedure than with the traditional extra-stimulus prompting procedure. Combining both prompted and unprompted trials, the subject's percentage of correct responses with the modified extra-stimulus prompting procedure was 87.6% while with the traditional extra-stimulus prompting procedure, it was only 65%. On the average, the child made 7.6 errors per session with the traditional extra-stimulus prompting procedure and only 2.7 errors per session with the modified extra-stimulus prompting procedure. Thus, while both prompting procedures were equally effective during training, the utilization of the modified extra-stimulus prompting procedure allowed the subject to make fewer errors while learning the receptive label than when the traditional extra-stimulus prompting procedure was used.

The accuracy of the subject's responses during the discrimination assessment and maintenance phases of the study are presented in Figure 2.

Insert Figure 2 about here

When acquisition of the receptive labels were assessed by presenting the verbal commands randomly immediately after training and three weeks after training, the subjects accuracy of response appeared to be somewhat higher with the label learned with the modified extra-stimulus prompting procedure than with the label learned with the traditional extra-stimulus prompting procedure. Looking at Figure 2, the subjects mean percentage of correct responses for the modified extra-stimulus prompting procedure was 68.8% while for the traditional extra-stimulus prompting procedure, it was only 47.5%. Thus, while the child was able to acquire a receptive label with both procedures, the modified extra-stimulus prompting procedure appeared to be more effective when the two verbal commands were randomly presented immediately after training and 3 weeks after training.

Discussion

Thus, the modified extra-stimulus prompting procedure appears to be an effective alternative to a traditional extra-stimulus prompting procedure to teach an autistic child a receptive label. When one looks at the accuracy of the child's responses during the discrimination assessment and maintenance phases of the study, there does appear to be some evidence that this modification of the extra-stimulus prompting procedure may be superior to the traditional approach. It would appear necessary, though, to provide more than two sessions of retention assessment in order to provide more conclusive evidence for the durability of the modified extra-stimulus prompting procedure.

The modified extra-stimulus prompting procedure did result in the child making fewer errors than the traditional extra-stimulus prmpting procedure. This probably occurred since the child had less unprompted trials with the modified procedure and thus less opportunity to make errors. A common explanation for limiting the number of extra-stimulus prompted trials is the fear that the child will become prompt dependent and stimulus control will not be transferred from the prompt to the training stimulus once the extra-stimulus prompt is removed (see Lovaas, 1977). This did not appear to happen in this case. It is possible that the high frequency of prompts in the modified procedure facilitated the child's attention to the training stimulus. In the studies which have reported the failure of extra-stimulus prompts to facilitate acquisition of visual and auditory discriminations (Schreibman, 1975, Koegel and Rincover, 1976), it is possible that these extra-stimulus prompts did not facilitate attention to the training stimulus, but were in fact distractors and inhibited the child's attention to the training stimulus. It would seem important when using extra-stimulus prompts to be certain that these prompts do facilitate the child's attention to the training stimulus. While repeated prompted trials without any unprompted trials may be effective in facilitating the child's attention to the training stimulus, it is

unclear how they help the child to attend to the relevant features of the training stimulus. Some kind of exaggeration or alteration of the training stimulus (i.e. within-stimulus prompt) as described by Schreibman (1975) and Lovaas (1977) would appear necessary if the goal of getting the autistic child to attent to the relevant dimensions of the training stimulus is to be reached.

Since this modified extra-stimulus prompting procedure was used to teach only one receptive label, it is unclear how effective the procedure would be with other receptive labels and other tasks. In addition, once the verbal command has been faded in, there is essentially no difference between the modified procedure and any other kind of extra-stimulus prompting procedure and thus it suffers from the same limitations as the other extra-stimulus prompting procedures. Yet, at least it is another alternative which the special education teacher of the autistic child can try if other prompting procedures fail. It does not require generation of any new stimulus materials, appears easy to implement, and does not require any more time than most other extra-stimulus prompting procedures.

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Table 1

Prompt-fading steps for the traditional extra-stimulus prompting procedure

Step 1: Full physical prompt (E takes child's hand and places it on the car)

Step 2: Physical prompt (E takes child's hand and places it just above the car)

Step 3: Physical prompt-halfway (E takes child's hand and moves it halfway between the car and the child)

Step 4: Minimal physical prompt (Child's hand is pulled in the direction of the car)

Step 5: Full pointing prompt (E points to car by putting his hand on the car)

Step 6: Pointing prompt-halfway (E points to the car, putting his hand halfway between the car and the child)

Step 7: Minimal pointing prompt (E points his hand in the direction of the car)

Note: On all fading steps, prompt is always paired with the verbal command, "touch the car." Fading steps pertain only to the prompted trials. Child also experienced unprompted trials during each training session.

Table 2

Prompt-fading steps for modified extra-stimulus prompting procedure

Step 1: Full physical prompt (Child's hand is moved to the doll, no verbal command is given)

Step 2: Physical prompt (E takes child's hand and places it just above the doll, no verbal command is given)

Step 3: Physical prompt-halfway (E takes child's hand and places it halfway between child and doll, no verbal command is given)

Step 4: Minimal physical prompt (Child's hand is moved in the direction of the doll, no verbal command is given)

Step 5: Full pointing prompt (E points to the doll by putting hand on top of the doll, no verbal command is given)

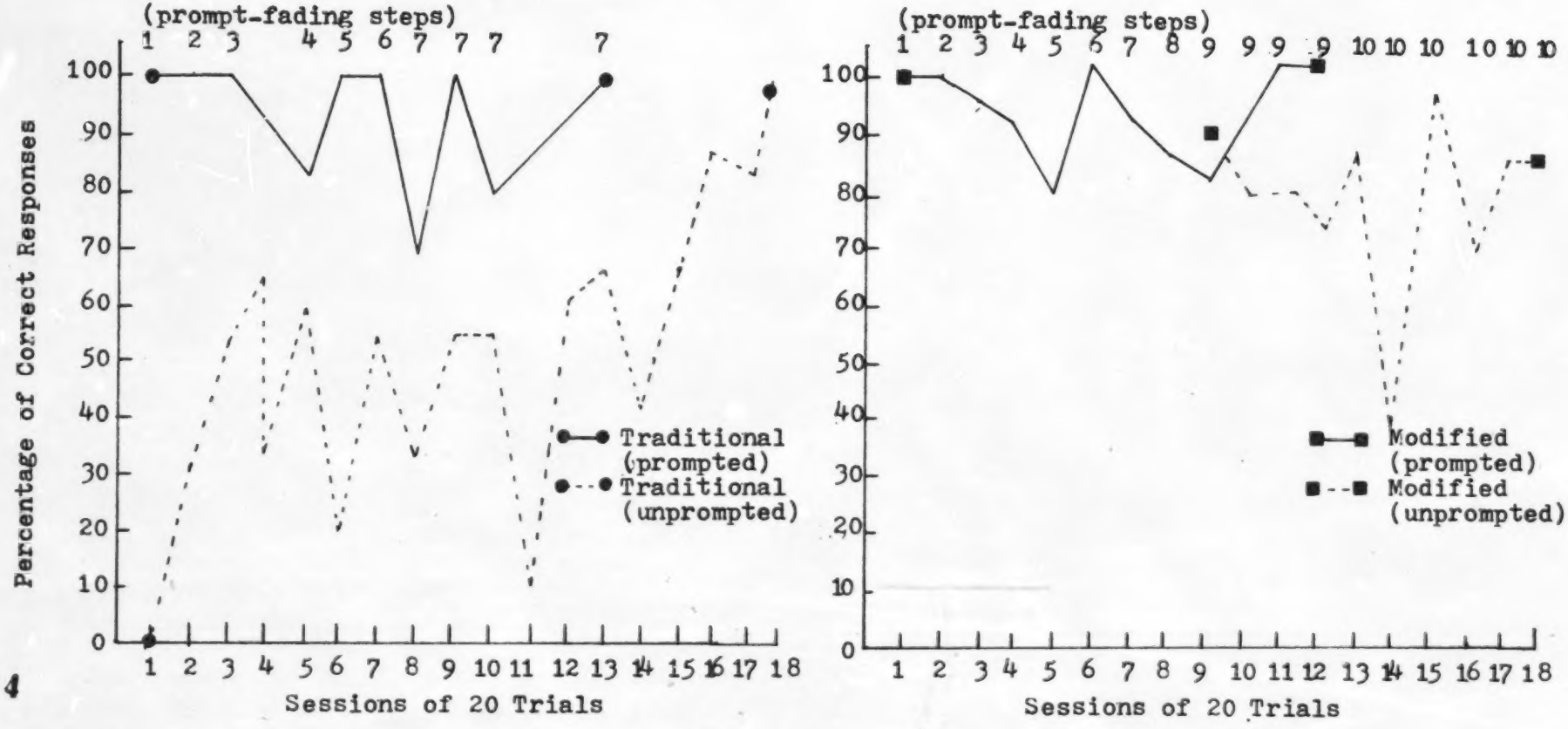
Step 6: Full pointing prompt paired with verbal command, "Touch the doll"

Step 7: Pointing prompt-halfway paired with verbal command, "touch the doll"

Step 8: Minimal pointing prompt paired with verbal command, "touch the doll"

Step 9: Verbal command, "touch the doll" (unprompted trial) randomly presented with Step 8 prompted trials

Step 10: Verbal command, "touch the doll" (unprompted trial)



14

Figure 1. Accuracy of Response for the Traditional Extra-Stumulus and Modified Extra-Stimulus Prompting Procedures during Training.

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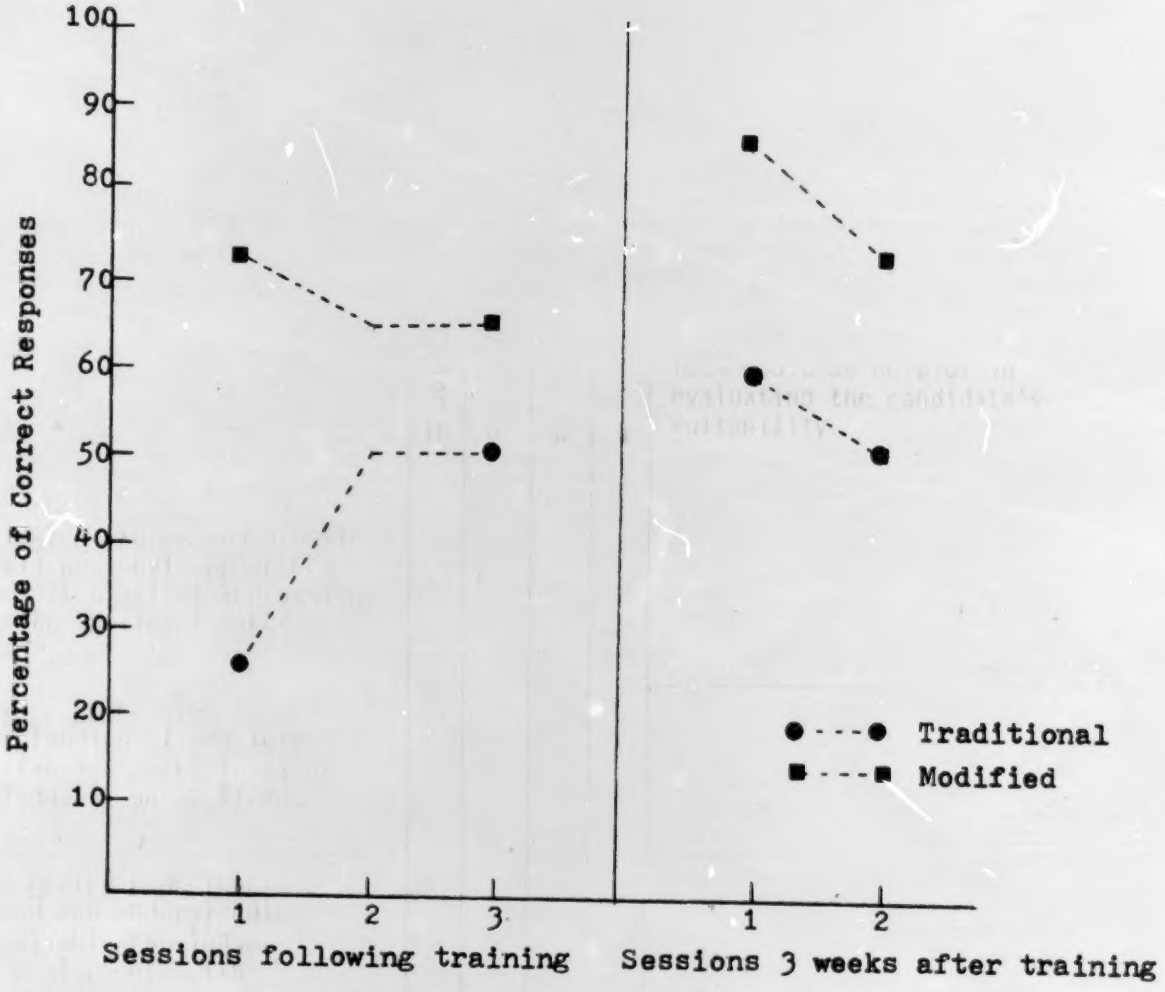

Figure 2. Accuracy of response to random presentations of verbal commands for the traditional and modified extra-stimulus prompting procedures.